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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/564,307

10/17/2006

James H. Babler

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EXAMINER

LAO, MARIALOUIA

ART UNIT

PAPER NUMBER

1621

MAIL DATE

DELIVERY MODE

12/07/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/564,307

Applicant(s)

BABLER, JAMES H.

Examiner

M. Louisa Lao

Art Unit

1621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 October 2007.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 45-53 and 55-65 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 45-51, 55-59 and 62-65 is/are rejected.
- 7) ☒ Claim(s) 52, 53, 60, 61 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see REMARKS, filed 10/16/07,
 - a. with respect to claims 54, Examiner acknowledges the cancellation thereto;
 - b. with respect to the rejection of claim 45 under 35 U.S.C. 112, 2nd para. has been fully considered and are persuasive. Therefore, the rejection has been withdrawn.
 - b. with respect to the rejection(s) of claim(s) 45-53 and 55-64 under 35 U.S.C. 103(a) have been fully considered, where arguments for independent claims 63 and 64, are persuasive. Therefore, the rejection has been withdrawn. However, the rejection of independent claim 45, as originally written, under 35 U.S.C. 103(a) were proper. And upon further consideration, a new ground(s) of rejection is made, as prompted by the amendments thereto and the other claims, as applicable, see discussion below.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:
 1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
4. This application currently has a single inventor, as duly noted by Examiner.

5. **Claims 45-51, 55-59 and 62-65 are rejected** under 35 U.S.C. 103(a) as being unpatentable over Babler (us 5872277, US`277 *in IDS*) in view of Babler (US6278016, US`016 *in IDS*) and Clark (GB1172516, GB`516).

6. The instant claims are drawn to a method for preparing an ester from the reaction of a conjugated diene compound with alkanoic acid(s) (acetic acid, propionic acid, butyric acid, isobutyric acid, isovaleric acid and mixtures thereof), with a $pK_a < 4$, in the presence of a non-basic organic co-solvent (ethyl acetate, isopropyl acetate, 2-butanone, methylbenzene and mixtures thereof) and a base having the formula $(R_2CO_2)M$, as described therein(sodium acetate, potassium acetate and sodium propionate); a heating temperature in excess of 100°C, said alkanoic acid in a molar concentration greater than that of the conjugated diene; said diene added in dropwise fashion; whereby said reaction is conducted in a pressurized vessel.

7. US`277 teaches methods for preparing prenyl alcohol and ester derivatives of prenyl alcohol (column 1 lines 7-8). US`277 teaches the process of dropwise addition of isoprene to the carboxylic acid, having $pK_a < 4$, where use of an organic base catalyst, preferably a sodium or potassium salt of the reactant carboxylic acid, improves the yield (see Abstract). US`277 teaches the process steps in column 5 lines 10-49, where the alkanoic acid, slow addition of isoprene, presence of organic base, are therein defined. US`277 teaches in working examples the use of carboxylate salt (Example IV, column 9), dichloroacetate salts (Example VII, column 11) relative to examples with different types of alkanoic acids. US`277 teaches that the presence of the salt has the beneficial effect on the increased yield of the prenyl ester (column 11 lines 41-42).

8. The instant claims differ from US`277 in that US`277 exemplifies the reaction to occur at room temperature. However, US`016 is relied upon to teach the method of conversion of isoprene to its corresponding alcohols via an ester intermediate. In column 3 lines 30-67 bridging to column 4 lines 1-7, US`016 states that methods for converting isoprene to certain prenyl esters are known, and illustratively, isoprene is added to a mixture of alkanoic acids with an inorganic acid catalyst *or* alternatively, without a catalyst (as illustrated in the schematic chemical reaction in column 3) in a pressurized vessel at a *temperature of approximately 40°C to 100°C* to form the corresponding prenyl ester. The latter is then hydrolyzed to the corresponding alcohol.

9. The instant claims differ from US`277 and US`016 in that the latter two exemplify the reaction to occur without a solvent. However, GB`516 is relied upon, on the other hand, to teach the esterification of myrcene with its reaction with a stoichiometric excess of carboxylic acids to form acetates, primarily geranyl and neryl. In page 2 column 1 lines 14-43, GB`516 teaches that the nature of the carboxylic acid, the ratio of acid to myrcene and in the second column lines 79-82, GB`516 teaches that no more than the specified amount, should an acid that has $pK_a > 3$ should be present in the reaction system. GB`516 also states *that a solvent may be present* and the reaction mixture is *heated to temperature* is 50°C to 250°C, and kept a temperature 10°C to 20°C below the reflux temperature of the reaction mixture and carried out under *super-atmospheric pressure*. Periodic or continuous analytical testing is used to monitor the progress of the reaction.

10. At the time of the invention, one of ordinary skill in the art looking to improve on the method of esterification of US`016 and US`277 and GB`516, would have found it *prima facie*

obvious to start with the teachings of the cited prior art references, to make Applicants' process of preparing an ester from the reaction of a conjugated diene compound with alkanolic acid(s) with a $pK_a < 4$, in the presence of a non-basic organic co-solvent and a base. The combination of the teachings of the cited prior art suggests that specific features of their invention may be combined with other features in accordance with the invention, and alternatively embodiments will be recognized by those skilled in the art and are intended to be included within the scope of the claims. Therefore, it would have been obvious to modify the combined cited prior art processes, such as by using alternate solvents like ethyl acetate, isopropyl acetate, 2-butanone, methylbenzene and mixtures thereof, since these are within the purview of artisan through routine experimentation, to develop more facile esterification process with a reasonable expectation of success.

The claim would have been obvious because a particular known technique was recognized as part of the ordinary capabilities of one skilled in the art.

The Supreme Court in *KSR* noted that if the actual application of the technique would have been beyond the skill of one of ordinary skill in the art, then the resulting invention would not have been obvious because one of ordinary skill could not have been expected to achieve it.

11. Absent a showing of unexpected results, the combination of the teachings of the cited prior art references render the instant claims obvious.

Allowable Subject Matter

12. Claims 52, 53, 60 and 61 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Correspondence

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to MLouisa Lao whose telephone number is 571-272-9930. The examiner can normally be reached on Mondays to Thursdays from 8:00am to 8:00pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yvonne Eyler can be reached on 571-272-0871. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

`ml112042007
MLouisa Lao
Examiner
Art Unit 1621

Yvonne Eyler
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TC1600 GAU 1621